

Appl. No. 09/498,398  
Arndt. dated September 22, 2003  
Reply to Office Action of August 15, 2003

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REMARKS/ARGUMENTS

Interview

An interview took place on Oct. 28, 2003 with the Examiner, Inventor Sorqvist, Inventor Kleijn, and the undersigned attorney for the Applicants. A draft amendment was discussed along with the cited references. No definitive conclusions were reached.

In the interview, the point was made by the Applicants that Shlomot et al. does not contemplate permanent packet loss in the received signal. The Examiner cited col. 3, lines 54-56, for the proposition that Shlomot et al. taught lost packets because of the mention of "missing speech packets." Applicants believe that is not a reasonable interpretation when considered in the context of the whole Shlomot et al. patent. More specifically, Shlomot et al. means a drained buffer or an underflow condition when using the term "missing speech packets."

Shlomot et al. is directed to the problem of clock skew and other timing based problems. See col. 2, lines 50-61 and col. 3, lines 36-42. For example, clock skew is caused by different sampling frequencies at the endpoints. Shlomot et al. talks about how "missing packets" or buffer underflow can be detected based on the number of packets in the buffer. See col. 8, line 59, through col. 9, line 3. This teaching of Shlomot et al. cannot possibly include handling packet loss, because with packet loss, the next packet may be permanently missing while many later packets are in the buffer.

Shlomot et al. states that timing corrections do not need to take place immediately after detection, but within three seconds in his severe clock drift example. See col. 6, line 57, through col. 7, line 9. Imagining for the sake of argument that "missing packets" means lost packets, this multi-second delay in taking corrective action would not make any sense since missing speech data in the lost packets would need to be generated immediately to fill the gap in the voice conversation.

Applicants also refer to Figure 4 that shows only high quality corrections are made if they take place in speech segments classified as silence or unvoiced. However, in the case of packet loss, high quality corrections or signal expansion must be applied at once. In other words, waiting for a silent period would make no sense because there is an immediate to

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fill in the gap in speech created by the packet loss. Waiting to fill the gap cannot address an immediate need to expand the signal to cover the lost packet(s).

For at least these reasons, Applicants believe continued reliance upon Shlomot et al. for the proposition that a signal with packet loss is taught is unreasonable.

Amendments

The claims are modified in the amendment. More specifically, claims 26, 43 and 44 have been amended. Therefore, claims 13-21 and 26-44 are present for examination. No new matter is added by these amendments. Applicants respectfully request reconsideration of this application as amended.

35 U.S.C. §103 Rejection of Claims 20 and 26-44, Shlomot et al. & Covell et al.

The Examiner has rejected all pending claims 20 and 26-44 under 35 U.S.C. §103(a) as being unpatentable over Shlomot et al. (U.S. Patent No. 5,699,481) in view of Covell et al. (U.S. Patent No. 5,828,994). Applicants believe a *prima facie* case of obviousness has not been properly set forth in the final Office Action with regard to a rejection of claims 20 and 26-44. The patent office is charged with putting forth a *prima facie* showing of obviousness. The basic test is excerpted below:

“To establish a *prima facie* case of obviousness, three basic criteria must be met.

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.” See MPEP §2143, Original Eighth Edition, August, 2001, Latest Revision February 2003.

Applicants believe the rejection has flaws with all three prongs of the above test for establishing a *prima facie* case of obviousness.

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**Teachings Missing from the Cited References**

With regard to the third prong of the test, Applicants believe the cited sections of Shlomot et al. ("Shlomot") and the cited sections of Covell et al. ("Covell") do not, either alone or in combination, teach or suggest the invention in the claims. More specifically, neither Shlomot nor Covell teach or suggest working with data stream that might exhibit packet loss as generally required by the claims. For least these reasons, Applicants respectfully request for reconsideration of the rejection to the claims.

**Summary of Cited References**

Shlomot teaches a time recovery scheme where packets are late due to clock drift. Shlomot does not teach how to handle situations where packets are permanently lost, only how to handle situations where they are delayed due to clock drift. Shlomot teaches how the transmitter may decide not to send packets during silence and that the same CSP can be played over and over again or muted in such scenarios. See col. 9, lines 24-44. Even if the Shlomot technique could be used for packet loss, it would lead to significant audible distortions at the boundaries to the next received and decoded frame for segments containing speech or audio.

Covell teaches how to perform non-uniform time scaling on recorded audio to maintain intelligibility during fast playback. See col. 1, lines 60-11, and the Abstract. In her work, the speech is assumed to be continuous such that it is without missing speech segments (i.e., packet loss). The method can not be utilized in applications where time scaling sometimes is needed to cover for lost information. The time-varying time scaling that Covell teaches relies on linguistic parameters that can not be obtained in real time because this technique requires both previous and future frames when making a decision about compression or expansion.

**Missing Limitation: Packet Loss in Received Signal**

Neither Shlomot nor Covell teach or suggest working with data stream that might exhibit packet loss as generally required by the claims. Shlomot only addresses clock drift and Covell only addresses improving intelligibility. If it would work at all, Shlomot would experience significant distortion of the sound signal in the presence of lost packets. Covell

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would likely not work at all with packet loss as the technique requires past and future frames and cannot operate in real time.

*Other Missing Limitations in Dependent Claims*

Shlomot and Kubin use fixed sized segments and Covell uses different sized segments, but in none of these references is the segment size data dependent as in claims 26 and 38. None of the cited references contemplate expansion of the first part of a future frame as in claim 19. With respect to claim 34, none of the cited references contemplate considering multiple frames in deciding when to compress or expand. For example, Shlomot operates inside the decoder, therefore, it would only have access to one frame at a time. Accordingly, the Applicants believe at least these dependent claims provide further reasons for patentability. It is respectfully requested that any further office action specifically explain how these limitations would not be patentable.

*Motivation to Combine Shlomot et al. & Covell et al.*

The first prong of the test requires, a suggestion or motivation to combine references to avoid hindsight reconstruction of the claimed invention based upon the information disclosed in the present application. The second paragraph on page 4 of the Office Action appear to address the motivation to combine Shlomot and Covell, but the Applicants cannot find support for this motivation in either reference. Further, one of ordinary skill in the art would not believe such a combination is warranted given Shlomot can adequately solve the clock drift problem by repeating or delaying in silent periods. The following excerpt is believed apt in the present case:

"In the instant application, the examiner has done little more than cite references to show that one or more elements or subcombinations thereof, when each is viewed in a vacuum, is known. The claimed invention, however, is clearly directed to a combination of elements. That is to say, appellant does not claim that he has invented one or more new elements but has presented claims to a new combination of elements. To support the conclusion that the claimed combination

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is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed combination or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp, 227 USPQ 972, 973 (B.P.A.I. 1985)*

*Hindsight Reconstruction*

The only way this combination of Shlomot and Covell makes any sense is to use the Applicants' claims as a template, which is impermissible hindsight reconstruction. Shlomot addresses the problem of discontinuity between added or removed segments in a simple manner by only doing such an operation in a silent period. See Fig. 4, step 47. This solution in Shlomot teaches away from any solution Covell could add. Specific motivation for substituting one solution for another is respectfully requested in any further office action as Applicants can see no reason why one of ordinary skill in the art would deviate from the solution of Shlomot.

*Combination Wouldn't Teach Claimed Invention*

A combination of Shlomot and Covell would not even achieve the claimed invention. This combination would do both repeating in silent periods where there is skew and PSOLA where there is speech. The repeating of Shlomot is done during normal speed playback and the PSOLA of Covell is done during fast playback. These are separate problems that would be addressed by one of ordinary skill in the art separately in any combination. Only hindsight would allow scrambling and substituting features in the suggested combination.

*Reasonable Likelihood of Success in Combining Shlomot and Covell*

The second prong of the test requires a reasonable likelihood of success in any combination. Shlomot teaches zero insertion just before a buffer underflow, but Covell requires substantial processing to correct intelligibilities. It is not conceivable how these could be combined with any reasonable likelihood of success. Further, Covell requires both past and future frames to perform the PSOLA on a recorded signal and cannot operate in real time. One

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of ordinary skill in the art would not combine these references in the suggested manner with any likelihood of success because Covell could not work in real time.

35 U.S.C. §103 Rejection of Claims 13-19 and 21, Shlomot et al., Covell et al. & Kubin et al.

The Examiner has also rejected claims 13-19 and 21 under 35 U.S.C. §103(a) as being unpatentable over Shlomot in view of Covell et al. and in further view of Kubin et al. These claims are patentable for at least the reasons given above in relation to their respective independent claims. Like Shlomot, Kubin addresses the problem of intelligibility during fast playback and does not anticipate packet loss. Despite the contrary assertion in the Office Action, the Applicants believe Kubin does not teach or suggest the variable segments of claim 15, fine resolution of claim 16, gain scaling of claim 17 or how to avoid periodicity. Further these references lack motivation to combine them in the manner suggested or any reasonable likelihood of success should such a combination be attempted.

For at least these reasons, the claims addressed above are believed to have further reasons to support patentability. If these claims are rejected in a further office action, the Applicants respectfully request specifically addressing these further points of patentability.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is urged. Reconsideration of the claims in their current form is respectfully requested.

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If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 303-571-4000.

Respectfully submitted,

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